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TECHNICAL AND ECONOMIC EFFICIENCY OF DISPATCHER CENTRALIZATION ON SINGLE - TRACK RAILWAYS

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1. Dispatcher centralization of switches and signals is one of the principal modern methods of increasing the effectiveness of operation of single-track railways. Dispatcher centralization is a combination of automatic interlocking system on runs and electric centralization of switches and signals at intermediate stations with remote control of contralization devices by the section dispatcher.

2. Increased traffic capacity with dispatcher centralization results from shorter station intervals and employment of partial-pack arrangement of traffic. Depending on particular conditions on the section, traffic capacity increases 25-50%, and even more with two-track inserts. /Here and below we compare dispatcher centralization with the electric-staff system and hand-operated switches/.

3. Introduction of dispatcher centralization makes it possible to raise the sectional speed of the trains by 15-20%, thus reducing train-time, that is the time during which a train moves along the section. Use of the partial-pack arrangement may, under certain conditions, slow down the sectional speed, therefore the pack coefficient should not exceed 0.5 - 0.66.

4. Dispatcher centralization makes it possible to reduce considerably the service personnel /about 40-50 people on a 100 km section/ and, consequently, contributes to the general goal of increasing productivity of labour.

5. Introduction of dispatcher centralization eliminates complex and responsible jobs of switchmen and station-masters on duty, facilitates considerably the work of dispatchers, improves working conditions of locomotive crews, creates conditions for raising the cultural and educational level of these categories of railway workers.

In the USSR, where the care of man is an aim constantly pursued by the State, these properties are regardes as highly important.

6. The cost of setting up the system of dispatcher centralization is offset within 3-4 years due to reduction in operational costs resulting from reduction of train-time on the section and of service personnel.

7. Implementation of dispatcher centralization makes it possible to increase considerably the volume of traffic on the line and thus to do without expensive construction of the second track or to postpone it for a long period.

8. When introducing dispatcher centralization, special stress must be laid on development of tracks at intermediate stations. Depanding on the desired traffic capacity the following arrangements are used:

a) Transverse arrangements of stations;

b) longitudinal arrangements of stations designed for non-stop crossing of trains;

c) double-track inserts on limiting runs.

The last variant is the most expensive solution and should be resorted to only when other simplier methods of increasing traffic capacity have already been used.

9. Under Soviet conditions dispatcher centralization is compared in its technical and economic effect to other methods of traffic organisation and control of switches at intermediate stations.

The analysis of this comparison has lead the Soviet railway authorities to the conclusion that it is necessary to undertake a maximum development of dispatcher centralization and primarily on railways which handle more than 20-25 pairs of trains per day and are used for transit transportation.

Dispatcher centralization is now operating on many single-track sections of Soviet railways. On a number of lines equipped with dispatcher centralization the volume of traffic reaches 40-50 pairs of trains daily.

10. The systems of dispatcher centralization introduced on Soviet railways are based on using rail circuits, traffic-light signalling, relay relationships and fast code systems of selection widely employing electronic devices.

11. Large and sectional stations located on sections equipped with despatcher centralization, as well as individual intermediate stations where much freight and shunting operation is carried on, should be furnished with route-relay electric centralization controlled by the station-master on duty.

12. Sections of dispatcher centralization should be equipped with train radio apparatus which would enable the dispatcher to contact the engineers of all trains within the section.

13. To develop further and increase effectiveness of dispatcher centralization on Soviet railways, work is underway to introduce automation into dispatcher operation, to employ systems of transmitting train numbers and to solve other technical problems.

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